AMENDMENT OF SOLICITATION/MODIFICATION OF CONTRACT

1. CONTRACT ID CODE	PAGE	OF PAGES
N/A	1	18

2. AMENDMENT/MODIFICATION NO.	3. EFFECTIVE DATE	4. REQUISITION/PURCHASE REQ. NO.	5. PROJECT NO. *(If applicable)*
0003	04 JAN 7	N/A	

6. ISSUED BY — CODE

DEPARTMENT OF THE ARMY
CORPS OF ENGINEERS SACRAMENTO
1325 J STREET
SACRAMENTO, CALIFORNIA

7. ADMINISTERED BY *(If other than Item 6)* — CODE

SEE ITEM 7

8. NAME AND ADDRESS OF CONTRACTOR *(No., street, county, State and ZIP Code)*

CODE — FACILITY CODE

(√)	
X	9A. AMENDMENT OF SOLICITATION NO. W912P7-04-B-0001
	9B. DATED *(SEE ITEM 11)* 15 DEC 2003
	10A. MODIFICATION OF CONTRACTS/ORDER NO. N/A
	10B. DATED *(SEE ITEM 13)* N/A

11. THIS ITEM ONLY APPLIES TO AMENDMENTS OF SOLICITATIONS

[X] The above numbered solicitation is amended as set forth in Item 14. The hour and date specified for receipt of Offers [X] is extended, [ ] is not extended.

Offers must acknowledge receipt of this amendment prior to the hour and date specified in the solicitation or as amended, by one of the following methods:

(a) By completing Items 8 and 15, and returning 1 copies of the amendment; (b) By acknowledging receipt of this amendment on each copy of the offer submitted; or (c) By separate letter or telegram which includes a reference to the solicitation and amendment numbers. FAILURE OF YOUR ACKNOWLEDGMENT TO BE RECEIVED AT THE PLACE DESIGNATED FOR THE RECEIPT OF OFFERS PRIOR TO THE HOUR AND DATE SPECIFIED MAY RESULT IN REJECTION OF YOUR OFFER. If by virtue of this amendment you desire to change an offer already submitted, such change may be made by telegram or letter, provided each telegram or letter makes reference to the solicitation and this amendment, and is received prior to the opening hour and date specified.

12. ACCOUNTING AND APPROPRIATION DATA *(If required)*

13. THIS ITEM APPLIES ONLY TO MODIFICATIONS OF CONTRACTS/ORDERS, IT MODIFIES THE CONTRACT/ORDER NO. AS DESCRIBED IN ITEM 14.

(√) A. THIS CHANGE ORDER IS ISSUED PURSUANT TO: *(Specify authority)* THE CHANGES SET FORTH IN ITEM 14 ARE MADE IN THE CONTRACT ORDER NO. IN ITEM 10A.

B. THE ABOVE NUMBERED CONTRACT/ORDER IS MODIFIED TO REFLECT THE ADMINISTRATIVE CHANGES *(such as changes in paying office, appropriation date, etc.)* SET FORTH IN ITEM 14, PURSUANT TO THE AUTHORITY OF FAR 43.103(b).

C. THIS SUPPLEMENTAL AGREEMENT IS ENTERED INTO PURSUANT TO AUTHORITY OF:

D. OTHER *(Specify type of modification and authority)*

E. IMPORTANT: Contractor [ ] is not, [ ] is required to sign this document and return _____ copies to the issuing office.

14. DESCRIPTION OF AMENDMENT/MODIFICATION *(Organized by UCF section headings, including solicitation/contract subject matter where feasible.)*

PORT OF OAKLAND NAVIGATION - 50 FOOT IMPROVEMENT PROJECT, MIDDLE HARBOR ENHANCEMENT AREA CONTAINMENT STRUCTURE ALAMEDA AND CONTRA COSTA COUNTIES, CALIFORNIA

1 ENCL: 1) SF 1442 (2 PAGES), 00100-2, 02201 (7 PAGES) AND 02210 (7 PAGES).

NOTE: THE BID OPENING DATE HAS BEEN EXTENDED TO 27 JAN 2004.

Except as provided herein, all terms and conditions of the document referenced in Item 9A or 10A, as heretofore changed, remains unchanged and in full force and effect.

15A. NAME AND TITLE OF SIGNER *(Type or print)*		16A. NAME AND TITLE OF CONTRACTING OFFICER *(Type or print)*	
15B. CONTRACTOR/OFFEROR *(Signature of person authorized to sign)*	15C. DATE SIGNED	16B. UNITED STATES OF AMERICA BY *(Signature of Contracting Officer)*	16C. DATE SIGNED

SOLICITATION, OFFER, AND AWARD *(Construction, Alteration, or Repair)*	1. SOLICITATION NO. W912P7-04-B-0001	2. TYPE OF SOLICITATION [X] SEALED BID (IFB) [ ] NEGOTIATED *(RFP)*	3. DATE ISSUED 15-Dec-2003	PAGE OF PAGES 1 OF 152

IMPORTANT - The "offer" section on the reverse must be fully completed by offeror.

4. CONTRACT NO.	5. REQUISITION/PURCHASE REQUEST NO. W62A2B-3328-0346	6. PROJECT NO.

7. ISSUED BY CODE DACW07	8. ADDRESS OFFER TO *(If Other Than Item 7)* CODE
DEPARTMENT OF THE ARMY, SACRAMENTO DISTR CONTRACTING DIVISION 1325 J STREET SACRAMENTO CA 95814-2922 TEL:(916) 557-5201 FAX: (916) 557-7854	**See Item 7** TEL: FAX:

9. FOR INFORMATION CALL:	A. NAME JAMES E GARROR	B. TELEPHONE NO. *(Include area code)* *(NO COLLECT CALLS)* 916-557-5229

SOLICITATION

NOTE: In sealed bid solicitations "offer" and "offeror" mean "bid" and "bidder".

10. THE GOVERNMENT REQUIRES PERFORMANCE OF THE WORK DESCRIBED IN THESE DOCUMENTS *(Title, identifying no., date):*

Port of Oakland Navigation-50foot Improvement Project, Middle Harbor Enhancement Area Containment Structure
Alameda and Contra Costa Counties, California.

JOB DESCRIPTION: The work consists of marine construction and placement of approx. 102,000 tons of rock fill, 44,000 lf sheet pile, 5,500 tons riprap, 25,400 tons bedding material, 825 cy concrete, 3 navigational aids and 3 navigational buoys.

ESTIMATED COST RANGE OF PROJECT: $10,000,000 - 25,000,000

11. The Contractor shall begin performance within 10 calendar days and complete it within 275 calendar days after receiving [ ] award, [X] notice to proceed. This performance period is [X] mandatory, [ ] negotiable. *(See* FAR 52.211-10 *.)*

12 A. THE CONTRACTOR MUST FURNISH ANY REQUIRED PERFORMANCE AND PAYMENT BONDS? *(If "YES," indicate within how many calendar days after award in Item 12B.)* [X] YES [ ] NO	12B. CALENDAR DAYS 10

13. ADDITIONAL SOLICITATION REQUIREMENTS:

A. Sealed offers in original and _____ copies to perform the work required are due at the place specified in Item 8 by 1:00 PM *(hour)* local time ***27 Jan 2004*** *(date)*. If this is a sealed bid solicitation, offers must be publicly opened at that time. Sealed envelopes containing offers shall be marked to show the offeror's name and address, the solicitation number, and the date and time offers are due.

B. An offer guarantee [X] is, [ ] is not required.

C. All offers are subject to the (1) work requirements, and (2) other provisions and clauses incorporated in the solicitation in full text or by reference.

D. Offers providing less than 60 calendar days for Government acceptance after the date offers are due will not be considered and will be rejected.

SOLICITATION, OFFER, AND AWARD (Continued)

(Construction, Alteration, or Repair)

OFFER ***(Must be fully completed by offeror)***

14. NAME AND ADDRESS OF OFFEROR *(Include ZIP Code)*	15. TELEPHONE NO. *(Include area code)*
	16. REMITTANCE ADDRESS *(Include only if different than Item 14)* **See Item 14**
CODE / FACILITY CODE	

17. The offeror agrees to perform the work required at the prices specified below in strict accordance with the terms of this solicitation, if this offer is accepted by the Government in writing within _____ calendar days after the date offers are due. *(Insert any number equal to or greater than the minimum requirements stated in Item 13D. Failure to insert any number means the offeror accepts the minimum in Item 13D.)*

AMOUNTS	SEE SCHEDULE OF PRICES

18. The offeror agrees to furnish any required performance and payment bonds.

19. ACKNOWLEDGMENT OF AMENDMENTS

(The offeror acknowledges receipt of amendments to the solicitation -- give number and date of each)

AMENDMENT NO.										
DATE										

20A. NAME AND TITLE OF PERSON AUTHORIZED TO SIGN OFFER *(Type or print)*	20B. SIGNATURE	20C. OFFER DATE

AWARD ***(To be completed by Government)***

21. ITEMS ACCEPTED:

22. AMOUNT	23. ACCOUNTING AND APPROPRIATION DATA

24. SUBMIT INVOICES TO ADDRESS SHOWN IN *(4 copies unless otherwise specified)*	ITEM	25. OTHER THAN FULL AND OPEN COMPETITION PURSUANT TO ☐ 10 U.S.C. 2304(c) ☐ 41 U.S.C. 253(c)
26. ADMINISTERED BY CODE		27. PAYMENT WILL BE MADE BY: CODE

CONTRACTING OFFICER WILL COMPLETE ITEM 28 OR 29 AS APPLICABLE

☐ 28. NEGOTIATED AGREEMENT *(Contractor is required to sign this document and return _____ copies to issuing office.)* Contractor agrees to furnish and deliver all items or perform all work, requisitions identified on this form and any continuation sheets for the consideration stated in this contract. The rights and obligations of the parties to this contract shall be governed by (a) this contract award, (b) the solicitation, and (c) the clauses, representations, certifications, and specifications or incorporated by reference in or attached to this contract.

☐ 29. AWARD *(Contractor is not required to sign this document.)* Your offer on this solicitation, is hereby accepted as to the items listed. This award consummates the contract, which consists of (a) the Government solicitation and your offer, and (b) this contract award. No further contractual document is necessary.

30A. NAME AND TITLE OF CONTRACTOR OR PERSON AUTHORIZED TO SIGN *(Type or print)*	31A. NAME OF CONTRACTING OFFICER *(Type or print)*
	TEL: EMAIL:
30B. SIGNATURE / 30C. DATE	31B. UNITED STATES OF AMERICA BY / 31C. AWARD DATE

FAX: (916) 557-7854, Attn: James Garror

E-MAIL: James.E.Garror@usace.army.mil AND Ronald.A.Schunk@usace.army.mil.

(4) Please include the solicitation number, the project title, the location of the project, the full name of your company and your telephone and FAX numbers in your correspondence. Written inquiries should be received by this office not later than 14 calendar days prior to the date set for bid opening.

(5) Oral explanations or instructions are not binding. Changes to the solicitation can only be made by an amendment to the solicitation.

52.0214-4582 DIRECTIONS FOR SUBMITTING BIDS (MAR 2003)

Envelopes containing bids must be sealed, marked and addressed as follows:

MARK ENVELOPES:

Solicitation No. W912P7-04-B-0001
Bid Opening Date: ***27 Jan 04***
Bid Opening Time: 1:00 PM Local Time

ADDRESS ENVELOPES TO:

Department of the Army
U.S. Army Engineer District, Sacramento
ATTN: Contracting Division
1325 J Street
Sacramento CA 95814-2922

SPECIAL INSTRUCTIONS PERTAINING TO HAND-CARRIED BIDS:

Hand-carried bids must be delivered to: The Building Lobby at 1325 J Street, Sacramento, CA.

Due to security precautions, all Corps of Engineers visitors are now required to sign-in, leave a Photo-ID (such as a drivers license), and get a Visitor's Pass at the Security Desk in the Building Lobby. Bidders may no longer hand-carry their bids directly to Contracting Division without an authorized escort. Bids may NOT be either turned-in at the Security Desk or left unattended elsewhere in the Lobby. Additionally, you are advised that there is no longer public parking in the Building.

The Bid Opening Officer will be in the Building Lobby 20 minutes prior to the scheduled bid opening time to accept sealed bids. After announcing that no further bids will be received, the Bid Opening Officer will take the hand-carried bids and have them x-rayed as a security precaution. After the bids have been x-rayed, the bidders waiting in the Building Lobby will then be escorted as a group to the Bid Opening Room, where the bids will be publicly opened and read.

Bidders who desire to hand-deliver their bids at an earlier time must notify the contract specialist in advance to arrange to be met in the Building Lobby by Contracting Division personnel. In the event the contract specialist cannot be reached, please call the main Contracting Division telephone number, (916) 557-5201, in order to request assistance.

Please ensure that all courier and delivery personnel are aware of these procedures.

SECTION 02201

GEOTECHNICAL INSTRUMENTATION

PART 1 GENERAL

1.1 REFERENCES

The publications listed below form a part of this specification to the extent referenced. The publications are referred to in the text by the basic designation only.

AMERICAN SOCIETY FOR TESTING AND MATERIALS

ASTM A36	Specifications for Structural Steel
ASTM A53	Specifications for Pipe, Steel Black and Hot Dipped, Zinc Coated Welded and Seamless
ASTM A500	Specifications for Cold Formed Welded and Seamless Carbon Steel Structural Tubing in Rounds and Shapes
ASTM A501	Specifications for Hot Formed Welded and Seamless Carbon Steel Structural Tubing
ASTM C 150	Specifications for Portland Cement

AMERICAN WELDING STANDARDS

AWS D1.1	Structural Welding Code

1.2 SUBMITTALS

Submit the following in accordance with Section 01330, "Submittal Procedures".

SD-04 Drawings

Pipe Piles and Wire Rope Enclosures; GA

Instrumentation; GA

1.2.1 Pipe Piles and Wire Rope Enclosures

a. The Contractor shall provide written notification to the Contracting Officer at least 7 days in advance of its scheduled date for commencing of pile driving at the site. With its notification, the Contractor shall provide information including make, model, and rated driving energy of the pile driving hammer it proposes to use, and details of collars, shoes, splices, cushion blocks, and related items.

b. The Contractor shall submit welder qualification certificates for all field welders working on piles. The certificates shall be for

the type of welding to be performed.

c. Shop Drawings for the wire rope enclosures and instrument racks shall conform to AISC recommendations and specification and show all holes, etc. required for other work. Drawings shall include complete details showing all members and their connections, bolting layout, schedules for fabrication procedures, and diagrams showing sequence of erection.

1.2.2 Instrumentation

a. The Contractor shall submit a certificate of compliance for each type of instrumentas described herein:

For each Instrument specified herein, the certificate of compliance shall include:

1. Name of Supplier

2. Type of Materials

3. A statement from manufacturers that instrumentation supplied complies in all respects with the chemical and physical requirements of these specifications.

b. Installation procedures of instrumentation.

c. Listing of material and equipment.

d. Verification of instrumentation installer experience.

1.3 QUALITY ASSURANCE

The Contracting Officer may engage inspectors to inspect welded and bolted connections and perform tests and prepare test reports associated with the settlement platform construction.

The Contracting Officer will monitor pile driving, including the preparing driving records for each pile driven.

The Contractor shall drive pile to the tip elevation shown on the Drawings or as directed by the Contracting Officer.

Piles that are rejected by the Contracting Officer shall be removed and replaced with new piles or reused if acceptable to the Contracting Officer.

All instruments shall be installed under the observation of the Contracting Officer. The Contractor shall give at least 7 days notice to the Contracting Officer prior to mobilizing to install instrumentation.

PART 2 PRODUCTS

2.1 WIRE ROPE ENCLOSURES and INSTRUMENT RACKS

a. All structural steel shapes, plates, bar, and their products shall conform to the requirements of ASTM A36. All structural pipe shall conform to the requirements of ASTM A53, Type E or S, Grade B. All structural tube shall conform to the requirements of ASTM

A501 or ASTM A500, Grade B.

b. Except as otherwise specified, steel for bolts shall be in accordance with the requirements of ASTM A 307 Grade A or B, or threaded parts of ASTM A 36.

c. Wire rope shall be 5/16 inch in diameter, 7 by 19 galvanized cable with a minimum-working load of 1,900 pounds meeting ASTM A 90.

d. Wire fabric for instrument racks shall be galvanized metal with a minimum 3/4-inch openings or approved alternate.

2.2 PIPE PILES

a. Pipe piles shall be new, without defects, and free of excess mill scale and rust. Test reports on the steel furnished shall be those certified by the production mill only. Mill certificates and test reports shall provide all pertinent data on strength, ductility, chemical analysis, heat treatment, non-destructive testing and heat traceability.

b. Steel pipe piles shall be 24 inch outside diameter, 1/2-inch thick circular pipe sections.

c. The piles shall be welded or seamless steel pipe of diameter and thickness shown on the Drawings and meeting the requirements of ASTM A 252, with a minimum yield strength (Fy) of 50 ksi. Any substitution will be subject to prior approval of the Contracting Officer.

d. Pile sections shall not deviate from straightness by more than 1/8-inch in any 10 feet, nor more that 3/8-inch in any 40-foot length.

e. Splices in the pipes shall be made with a full penetration weld all around the circumference of the pile.

f. All longitudinal seams shall be made with full penetration welds. Longitudinal seams of two adjacent sections shall be at least 90 degrees apart.

g. All full penetration welds shall be tested using the ultrasonic technique in accordance with AWS D1.1 on 100 percent of the weld length at each joint or connection. If the weld is rejected by the Contracting Officer, the portion of weld with the flaw shall be ground out completely and the weld shall be done again.

h. All piles shall be cut off at the elevations shown. If a cutting torch is used, the cut surface shall be made smooth by grinding for proper welding of the cap grating.

i. Holes shall be cut into the side of the piles after installation to provide instrument cable access. If a cutting torch is used, the cut surface shall be made smooth by grinding or suitably protected to prevent damage to the instrument leads.

2.3 GRATING

a. Grating shall be welded steel or fiberglass (molded or extruded).

All grating shall be completely banded at all edges and cutouts using material and cross section equivalent to the bearing bars. Such banding shall be welded to each cut bearing bar. Grating shall be supported on all sides of an opening by support members. Grating shall be provided which will be within allowable stress levels, and which will not exceed a deflection of 1/4 inch or the span divided by 180, whichever is less. The loading to be used for determining stresses and deflections shall a minimum of 150 psf.

2.4 INSTRUMENTS AND MATERIALS

a. Vibrating Wire Piezometers: Instrument rack piezometers shall be vibrating wire type embankment piezometer Model Number 52611022 (low air entry). Shoal area piezometer shall be vibrating wire push in type Model Number 52621020, both types shall be as manufactured by Slope Indicator Co. Bothell, WA (425.806.2200) or approved equal.

b. Piezometer signal jacket will be shielded cable with four 22-guage tinned copper conductors and polyethylene jacket as manufactured by Slope Indicator Company, Bothell WA, or approved equal. Signal cable shall be factory connected.

c. Data Logger Enclosures: Protective enclosures shall be waterproof type Model Number 51419534 manufactured by Slope Indicator Company, Bothell, WA. or approved equal.

d. Position Transducer: Position transducer shall be linear displacement type Model No. 1950-60 manufactured by Houston Scientific International, Inc. Houston, TX (713.681.6631) or approved equal. Position transducer shall have a waterproof enclosure and have a flying lead cable compatible with a CR10X data logger manufactured by Campbell Scientific. Lead shall have sufficient length to extend 8 inches into the data logger enclosure.

e. Graduated Polyethylene Cables: Graduated cable shall be polyethylene with 1/100 foot graduations, Model Number 50670990 manufactured by Slope Indicator Company, Bothell, WA, or approved equal.

f. Bentonite: Bentonite shall be as manufactured by WYO-BEN Inc., Billings Montana (406.652.6351) or approved equal.

PART 3 EXECUTION

3.1 PIPE PILES

3.1.1 General

a. The Contractor shall furnish all tools, equipment, and incidentals necessary for satisfactory driving, installation and as-built surveying of the piles in conformance with these Contract Documents.

b. Piles, in their final position, shall be within 12 inches of their design locations measured in any horizontal direction, and shall be plumb to within 2 percent of vertical. Any deviation shall be

reported to the Contracting Offficer immediately.

c. The Contracting Officer may reject any pile that does not meet the above installation tolerances and may require Contractor, at Contractor's expense, to replace the pile.

d. After driving, the Contractor shall provide holes in the pipe piles at the locations and elevations shown on the Drawings.

3.1.2 Welding

Add-on pile sections shall be carefully aligned, and the bevel inspected to assure a full penetration weld can be accomplished. If necessary, the bevel shall be opened up by grinding and gouging. The Contracting Offficer shall inspect each joint preparation prior to welding. The Contractor shall test each splice weld using ultrasonic methods performed by an independent approved testing firm, and shall submit reports to the Contracting Offficer for review and acceptance. Rejected welds shall be removed and rewelded in accordance with the requirements of AWS D1.1.

3.1.3 Driving

a. Piles damaged during handling or driving shall, at the discretion of the Contracting Officer, be repaired in an acceptable manner or replaced, at the Contractor's expense.

b. Pile hammers shall be types that develop sufficient energy to drive the piles at a penetration rate of not less that 1/8-inch per blow without damage in the pile.

c. Vibratory pile hammers shall not be used.

d. If used, steam or air hammers shall be furnished with boiler or air capacity at least equal to that specified by the manufacturer of the hammer being used. The boiler or compressor shall be equipped at all times with an accurate pressure gage. The valve mechanism and other parts of the hammer shall be maintained in good working condition so that the length of stroke and number of blows per minute for which the hammer is designed can be attained at all times.

3.2 FABRICATION AND INSTALLATION OF WIRE ROPE ENCLOSURES

3.2.1 Fabrication

a. The Contractor shall verify all dimensions and shall make any field measurements necessary and shall be fully responsible for the accuracy and layout of work. The Contractor shall review the Drawings and any discrepancies shall be reported to the Contracting Officer for clarification prior to starting fabrication.

b. Fabrication and Erection: The fabrication and erection of the enclosures shall conform to the requirements of the American Institute of Steel Construction "Manual of Steel Construction.

c. Grating: All grating shall be fastened securely to the supports with a minimum of 4 fasteners per grating panel.

d. All welding shall be by the metal-arc method or gas-shielded arc method as described in the American Welded Society's "Welding Handbook" as supplemented by other pertinent standards of AWS. Qualification of welders shall be in accordance with the AWS Standards governing same.

e. In assembly and during welding, the component parts shall be adequately clamped, supported and restrained to minimize distortion and for control of dimensions. Upon completion of welding, all weld splatter, flux, slag, and burrs left by attachments shall be removed. Welds shall be repaired to produce workman like appearance, with uniform weld contours and dimensions. All sharp corners of material which is to be painted or coated shall be ground to a minimum of 1/32-inch on the flat.

3.2.2 Product Delivery, Storage and Handling

a. Structure members shall be loaded in such a manner that they may be transported and unloaded without being excessively stressed, deformed or otherwise damaged.

b. Steel components and packaged material shall be protecting from corrosion and deterioration. Materials shall be stored in a dry area and shall not be placed in direct contact with the ground. Materials shall not be placed in the structure in a manner that might cause distortion or damage to the member or the supporting structure. Repair or replace damaged materials or structure as directed.

3.2.3 Erection

a. The Contractor shall comply with the AISC Specification and Code of Standard Practice, and with special requirements.

b. The Contractor shall be responsible for designing and installing any temporary bracing required for the safe erection of all steel members.

c. After the wire rope enclosures are constructed, the Contractor shall install the data logger water proof enclosure at the top of each pile, as shown on the drawings.

3.3 INSTRUMENTATION

3.3.1 Vibrating Wire Piezometers

a. Vibrating wire piezometers shall be installed on the bottom of the instrument racks as directed by the Contracting Officer. The piezomters shall be saturated for 24 hours prior to installation with the piezomters inverted so porous stones are submerged and directed upward. Piezometers shall be installed during daylight hours only.

b. Leads from vibrating wire piezometers shall be threaded through the center of the pipe pile and extended to the top of the pipe pile after the instrument rack has been seated.

c. Tubing shall be marked in a manner that will allow, at all times, the identification of the piezometer tips the tubing serves. Two

feet of slack shall be provided outside of each pipe pile access hole and an additional 5 feet of slack shall be provided at the top of each pipe pile. Should the tubing be severed due to any cause, repair shall be made at the expense of the Contractor. After each piezometer is installed or repaired, it will be tested by the Contracting Officer. The Contractor shall, at its expense repair any defects shown by the testing.

d. The vertical location of the piezometer shall be established by survey by the Contractor to 0.01 foot in elevation after seating of each Instrument Rack.

3.3.2 Instrument Racks and Position Transducers

a. Contractor shall securely suspend instrument racks from wire rope enclosures and shall lower them onto the selected dredge fill/clay shoal surfaces as directed by the Contracting Officer. Instrument racks shall be seated in the dredge fill/ clay shoal so that they will not move laterally during fill placement.

b. Contractor shall securely fasten position transducers within the wire rope enclosures, as shown on the drawings. The Contractor shall securely attach the lead from the position transducer and the graduated cable to the wire rope attached to the instrument rack after the instrument rack has been seated.

c. Access shall be provided through which the position transducer leads can be threaded and inserted into the water proof data logger enclosure. The leads shall be marked in a manner that will allow at all times the identification of the instrument rack the lead serves. Should the lead be severed or damaged due to any cause, the Contractor shall, at his expense, replace the lead.

3.3.3 Shoal Piezometers

a. Vibrating wire piezometers shall be installed to the depths and locations shown on the drawings and in accordance with the manufacturer's specifications. The locations of the piezometer shown on the drawings are approximate. Actual locations and depths shall be as directed by the Contracting Officer.

b. Piezometers shall be pushed in from the clay shoal surface with the resulting hole sealed with a cement bentonite grout of bentonite clay using the tremie method.

1. Neat cement/bentonite grout shall be composed of one sack of Portland cement in accordance with ASTM C 150, type 1 or II (94 pounds); and 10 pounds bentonite to 4-1/2 to 6-1/2 (depending on cement type and additives used) gallons of clean water.

2. Bentonite clay or Volclay grout mixtures shall be thoroughly mixed before placement and the mixture must achieve a 9.4-pound per gallon grout weight prior to placement.

-- End of Section --

SECTION 02210

SUBSURFACE DRILLING, SAMPLING, AND TESTING

PART 1 GENERAL

1.1 REFERENCES

The publications listed below form a part of this specification to the extent referenced. The publications are referred to in the text by basic designation only.

AMERICAN SOCIETY FOR TESTING AND MATERIALS (ASTM)

ASTM D 1586	(1984; R 1992) Penetration Test and Split-Barrel Sampling for Soils
ASTM D 1587	(1994) Thin-Walled Tube Geotechnical Sampling of Soils
ASTM D 2487	(1993) Classification of Soils for Engineering Purposes (Unified Soil Classification System)
ASTM D 2488	(1993) Description and Identification of Soils (Visual-Manual Procedure)

ENGINEERING MANUALS (EM)

EM 1110-1-1906	(1996) Soil Sampling

1.2 SYSTEM DESCRIPTION

The purpose of the work specified herein is to determine the type, nature, and characteristics of dredged fill materials and the extent and conditions of the various materials as they exist to the depths and at the locations specified. This is to be accomplished by means of offshore rotary wash borings.

1.2.1 Rotary Wash Drive Sample Borings and Sampling

A drive sample boring is a boring made through unconsolidated or partly consolidated sediments or decomposed rock by means of a mechanically driven sampler. The purpose of these borings is to obtain knowledge of the composition, the thickness, the depth, the sequence, the structure, and the pertinent physical properties of foundation or borrow materials. Drive sample boring and sampling shall be performed in accordance with Chapter 8 of EM 1110-1-1906, ASTM D 1587 as directed by the Contracting Officer. Standard Penetration Tests (SPT) shall be performed in accordance with Appendix B of EM 1110-1-1906 ASTM D 1586.

1.3 SUBMITTALS

Government approval is required for all submittals with a "GA" designation; submittals having an "FIO" designation are for information only. The following shall be submitted in accordance with Section 01330 SUBMITTAL

PROCEDURES:

SD-01 Data

Permits, Certifications, and Licenses; FIO.

The Contractor shall comply with all Federal, State and local laws, regulations and ordinances relating to the performance of this work. The Contractor shall, at his own expense, procure all required permits, certifications and licenses required of him by Federal, State, and local law for the execution of this work. Copies of all such documents shall be furnished to the Contracting Officer prior to starting work.

SD-08 Statements

Drilling, Sampling, and Testing Plan; GA.

Prior to starting work, the Contractor shall submit a plan for drilling, sampling, testing, and safety. The plan shall include, but not be limited to, the proposed method of drilling and sampling including a description of the equipment and sampling tools that will be used, a listing of any subcontractors to include a description of how the subcontractors will be used and a description of all methods and procedures that will be utilized to insure a safe operation and to protect the environment. This submittal shall also include a statement of the prior experience, in the type of work described in these specifications, of the person or persons designated to perform the work specified herein. No work shall be performed until this plan has been approved and no deviation from the approved plan will be permitted without prior approval by the Contracting Officer.

SD-18 Records

Drilling Log; GA.

The Contractor shall submit complete, legible copies of DRILLING LOG, ENG FORM 1836 and 1836A and records to the Contracting Officer within 2 days after a hole is completed.

1.4 CARE AND DELIVERY OF SAMPLES

1.4.1 General

The Contractor shall be solely responsible for preserving all samples in good condition. Samples shall be kept from freezing and from undue exposure to the weather, and shall keep all descriptive labels and designations on sample jars, tubes, and boxes clean and legible until final delivery of samples to, and acceptance by, the Contracting Officer. Except as otherwise specified, the Contractor shall deliver samples to the Engineer. Samples shall be delivered within the time limits specified for each type of investigation or in accordance with schedules prepared by the Contracting Officer.

1.5 PROJECT/SITE CONDITIONS

1.5.1 Environmental Requirements

The Contractor shall comply with Section 01354 ENVIRONMENTAL PROTECTION.

In order to prevent and to provide for abatement and control of any environmental pollution arising from Contractor activities in the performance of this contract, the Contractor and his subcontractors shall comply with all applicable Federal, State, and local laws, regulations, and ordinances concerning environmental pollution control and abatement.

a. The Contractor shall be responsible for keeping informed of all updates and changes in all applicable laws, regulations, and ordinances.

b. The Contractor shall not pollute lakes, ditches, rivers, springs, canals, waterways, groundwaters, or reservoirs with drill fluids, fuels, oils, bitumens, calcium chloride, insecticides, herbicides, or other materials that may be harmful to the environment or a detriment to outdoor recreation.

1.5.2 Field Measurements

The approximate locations of drill holes are shown on the attached drawings. The actual locations will be established in the field by the Contracting Officer prior to the start of work. The elevations of the established locations will also be provided by the Contracting Officer prior to the start of work. The Contractor will provide access to the locations as he deems necessary for the prosecution of the work. Since no separate payment will be made for access construction, all costs associated with this shall be included in the cost of drilling excavating.

1.6 SEQUENCING AND SCHEDULING

1.6.1 Schedule of Drilling, Sampling and Testing

The schedule of Drilling, Sampling, and Testing is shown on the drawings.

1.6.2 Order of Work

The Contractor shall commence operations on Hole No. 1 and proceed so as to complete Holes Nos. 2, 3, and 4.

The order in which the work is to be accomplished will be determined in the field by the Contracting Officer.

It is intended that the drilling be accomplished in the numerical sequence indicated in the SCHEDULE OF DRILLING, SAMPLING, AND TESTING shown on the drawings; however, the Contracting Officer may vary the order whenever and in whatever manner he deems best for accomplishing the work.

a. The Contractor shall provide a qualified, licensed Geologist or Geotechnical Engineer experienced in subsurface exploration for each drill unit to oversee all drilling, sampling, and field testing operations. This individual shall be responsible for the preparation of a separate log and/or report for each boring, pressure test, or test pit. This individual shall also be responsible for the preparation of all soil samples for delivery to the designated point.

b. The presence of a Government representative or the keeping of separate drilling records by the Contracting Officer shall not

relieve the Contractor of the responsibility for the work specified in this specification.

PART 2 PRODUCTS

2.1 CONTAINERS

The Contractor shall furnish jars, tubes, and boxes that meet the following requirements. All such containers will become the property of the Government and the cost thereof shall be included in the contract price for the applicable item for which payment is provided.

2.1.1 Sample Jars

Sample jars shall be over 2-1/4 inches in diameter glass jars with moisture-tight screw tops.

2.1.2 Shipping Boxes

Boxes for shipping sample jars shall be corrugated cardboard boxes that have the capacity to hold no more than 12 sample jars and the strength to contain and protect the jars and their contents under ordinary handling and environmental conditions.

2.2 LABELS

2.2.1 Sample Jar Labels

A printed or type-written, fade resistant and waterproof label shall be affixed to the outside of each jar and shall contain the following information:

PROJECT Middle Harbor Habitat LOCATION _____

HOLE NO. _____ STATION _____

JAR NO. _____ of _____ JARS

TOP ELEV. OF HOLE _____ DEPTH OF SAMPLE _____

DESCRIPTION OF MATERIAL _____
(Such as Moist, silty, medium sand)

2.2.2 Shipping Box Labels

Each box of jar samples shall be identified with weatherproof and wear-proof labels indicating the following:

PROJECT: _____

LOCATION: _____

JAR SAMPLES FROM HOLE OR HOLES: _____

PART 3 EXECUTION

3.1 MOBILIZATION AND DEMOBILIZATION

3.1.1 Mobilization

Mobilization shall consist of the delivery to the site of all plant, equipment, materials and supplies to be furnished by the Contractor, the complete assembly in satisfactory working order of all such plant and equipment at the jobsite and the satisfactory storage at the site of all such materials and supplies.

3.1.2 Demobilization

Demobilization shall consist of the removal from the site of all plant, equipment, materials and supplies after completion of the work and also includes, at the direction of the Contracting Officer, the cleanup and removal of all scrap, waste backfill material, waste drilling fluid, soil contaminated with engine/hydraulic oil, backfilling all sumps or excavations resulting from the operations and, in general, returning the site as close to its original condition as possible.

3.2 EQUIPMENT AND SUPPLIES

3.2.1 Rotary Wash Drive Sample Boring and Sampling

Equipment to be furnished by the Contractor for making drive sample borings shall include, but not be limited to, standard 2-inch OD and 3-inch OD split barrel drive samplers and power-driven drilling machinery of a type or types approved by the Contracting Officer, complete with a drive-hammer of 140-pound weight and all other accessories for taking samples of all types of soils or decomposed rock at the locations and to the depths indicated in the SCHEDULE OF DRILLING, SAMPLING, AND TESTING shown on the drawings. The drive shoe for the split barrel samplers shall be of hardened steel and shall be replaced or repaired when it becomes dented or distorted. Supplies shall include, but not be limited to, all casing, drill stem, drill bits, drill fluid and additives, pumps, and power necessary to accomplish the required boring and sampling.

3.3 ROTARY WASH DRIVE SAMPLE BORING AND SAMPLING

Samples shall be labeled in accordance with paragraph IDENTIFYING SAMPLES. Drive sample borings drilled through overburden materials shall be suitably cased to permit obtaining drive samples of the size or sizes specified or as directed. Samples shall be taken continuously or as otherwise directed by the Contracting Officer. The sampler shall be driven with the force of the 140 pound drive hammer under a free fall of 30 inches. To minimize the compacting effect of casing driving when casing is used to stabilize a boring, the bottom of the casing shall be kept as high above the soil sampling zone as conditions permit. If hollow stem auger is used as a casing and/or to advance the boring, a plug assembly must be used to keep soil from entering the inside of the auger. Below the water table, water shall be maintained within the hole at or above the groundwater level. Where information on the natural water content of soils above the water table is not needed and when approved by the Contacting Officer, boreholes may be drilled without casing by using a suitable drilling fluid to prevent collapse of sidewalls. When a drilling fluid is used, soil sampling shall be done by such means that will prevent inclusion of drilling fluid in the samples. The samples shall be placed in sample jars as soon as possible after they are taken from the hole and, when possible, the volume of the sample shall be large enough to completely fill the sample jar in order that the natural moisture content of the material may be retained to the fullest extent possible. All samples shall be labeled. No sample shall

remain at the site of boring for more than one week after being taken from the hole.

3.4 BACKFILLING

3.4.1 Drill Holes

Unless otherwise noted in these specifications or directed by the Contracting Officer, all drill holes shall be abandoned in accordance with all Federal, State, and local laws, regulations and ordinances.

3.5 RECORDS

The Contractor shall keep accurate driller's logs (DRILLING LOG, ENG FORM 1836, and 1836-A will be provided by the Contacting Officer) and records of all work accomplished under this contract and shall deliver complete, legible copies of these logs and records to the Contracting Officer within 2 days after a hole is completed. All such records shall be recorded during the actual performance of the work and shall be preserved in good condition and order by the Contractor until they are delivered and accepted. The Contracting Officer shall have the right to examine and review all such records at any time prior to their delivery to him and shall have the right to request changes to the record keeping procedure. The following information shall be included on the logs or in the records for each hole:

a. Hole number or designation and elevation of top of hole.

b. Driller's name and Geologist's/Geotechnical Engineer's name.

c. Make, size, and manufacturer's model designation of drilling,sampling,pressure testing, and test-pit excavating equipment.

d. Type of drilling and sampling operation by depth.

e. Hole diameter.

f. Dates and time by depths when drilling and sampling operations were performed.

g. Time required for drilling.

h. Drill action, rotation speed, hydraulic pressure, water pressure, tool drops, and any other unusual and non-ordinary experience which could indicate the subsurface conditions encountered.

i. Depths at which samples were recovered or attempts made to sample including top and bottom depth of each run.

j. Classification or description by depths of the materials sampled using the Unified Soil Classification System (ASTM D 2487) and including a description of moisture conditions, consistency and other appropriate descriptive information described in paragraph SUPPLEMENTAL BORINGS of ASTM D 2488. This classification or description shall be made immediately after the samples or cores are retrieved.

l. Indication of penetration resistance such as drive-hammer blows

given in blows per foot for driving sample spoons and casing.

m. Weight of drive hammer.

n. Percentage of sample recovered per 18 inches driven.

o. Depths at which the color of the drill water return changes.

p. Type and weight of drill fluid.

q. Depth of bottom of hole.

r. Ground or mudline elevation of top of hole.

-- End of Section --